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# *SIDERASTREA GLYNNI*, A NEW SPECIES OF SCLERACTINIAN CORAL (CNIDARIA: ANTHOZOA) FROM THE EASTERN PACIFIC

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*Abstract.*—A new species of *Siderastrea* (*S. glynni*) has been found in shallow (7–8.5 m deep) reef rubble north of Isla Uraba, Bay of Panama, in the eastern Pacific region. The species is extremely rare. Its colonies are unattached, spheroidal in shape, and approximately 7–10 cm in diameter. *Siderastrea glynni* is distinguished by relatively small corallites (2.5–3.5 mm); numerous thin septa (40–48 per corallite); a porous columella; and a distinctive synapticular meshwork. The discovery of the new species is unusual because the genus *Siderastrea* typically occurs today in the Atlantic and Indian Oceans and is known in the Pacific only from a rare occurrence in the Philippine Islands.

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A total of 19 species and seven genera of modern hermatypic scleractinian corals have been reported from the eastern Pacific coast of Panama (Holst & Guzmán 1993). The 19 species consist of: two "*Cycloseris,*" one *Gardineroseris,* five *Pavona,* five *Pocillopora,* two *Porites,* three *Psammocora,* and one *Siderastrea.* Six or more of the species are restricted to the extreme eastern Pacific (Wells 1983); however, the distributions of all seven genera except *Siderastrea* are widespread across the Indo-Pacific (Veron 1993). Here we describe an unusual new species of *Siderastrea.* It was recently discovered by one of us (HMG) while diving at depth of 7–8.5 m along an upper reef slope north of Isla Uraba in the Bay of Panama near the Pacific entrance to the Panama Canal (Fig. 1). Despite extensive search, only one population of the species has been found. It originally consisted of five unattached colonies, all of which were spheroidal in shape and approximately 7–10 cm in diameter (Fig. 2). The five colonies were found in a small patch ($<8$ $m^2$) over coral rubble within a 1 m distance from one another. One of the five colonies was collected and is described below. Since field observations suggested that the species may be close to extinction, the other four colonies were left alive at the original discovery site in an effort to preserve the species. The rarity of this species is similar to *Millepora boschmai* Weerdt & Glynn, 1991, a recently discovered eastern Pacific species of Hydrozoa.

The discovery of the *Siderastrea glynni* is particularly noteworthy because the genus occurs today mainly in the Atlantic and Indian Oceans (Veron 1986). Although Veron (1986) alludes to possible Indo-Pacific occurrences of *S. radians,* only one species, *S. savignyana,* is well-documented in the central Indo-Pacific, represented by one specimen from the Philippine Islands (Veron 1993). Another species of the genus (*Siderastrea mendenhalli*), however, was extremely abundant in south-central California at the northernmost end of the Gulf of California during early Pliocene time (Foster 1979, 1980a; Budd 1989).

Comparisons among *Siderastrea glynni,* the two Pacific species noted above, and three modern and two fossil Atlantic species (Table 1) indicate that the new species, *S. glynni,* is morphologically unique. *S. glynni* differs from the modern and the fossil Pacific species primarily in its small, well-rounded, unattached colony shape and in

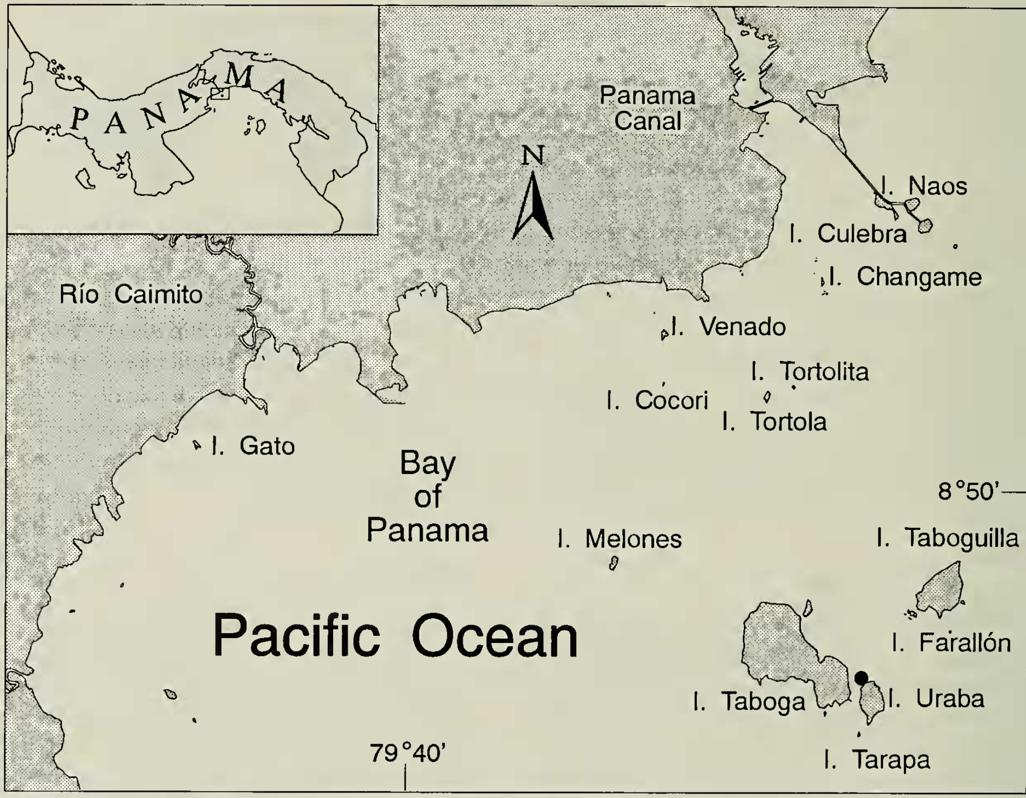


Fig. 1. Type locality (black dot) of *Siderastrea glynni.* Five colonies were found in a small patch at a depth of 7–8.5 m on the upper reef slope north of Isla Uraba, Bay of Panama.

its small corallite size and numerous septa (Fig. 3). It also has a relatively thinner wall and a shallower columellar fossa than modern Indo-Pacific *S. savignyana. Siderastrea glynni* differs similarly from the two common modern Caribbean species of *Siderastrea* (*S. radians, S. siderea*) by having small, shallow calices and numerous thin septa (Fig. 4). Of the two modern Caribbean species, *S. glynni* is most similar to *S. radians,* but differs in septal number and thickness, and in the development of the columella and synapticulae. Of the three Neogene Caribbean species in Table 1, *Siderastrea glynni* is most similar to *S. mendenhalli,* the species noted above whose distribution extended to the eastern Pacific. However, *S. glynni* has smaller corallites and fewer septa than *S. mendenhalli.*

On the basis of these distributional and morphologic comparisons, we recognize *S. glynni* as sufficiently distinct to describe it below as a new species.

*Abbreviations of Repository Institutions.*—USNM: U.S. National Museum of Natural History, Department of Invertebrate Zoology, Smithsonian Institution, Washington, D.C. 20560. SUI: University of Iowa, Department of Geology, Iowa City, IA 52242.

Order Scleractinia Bourne, 1900
Suborder Fungiina Verrill, 1865
Family Siderastreidae Vaughan & Wells, 1943
Genus *Siderastrea* de Blainville, 1830

*Type species.*—*Madrepora radians* Pallas, 1766:322–323. The holotype is figured in

Seba, 1756, pl. 122, figs. 12, 14, 18; and is currently lost.

*Diagnosis.*—Massive, branching or encrusting colonies. Cerioid corallites formed by extratentacular budding. Well-defined, synapticulothecate wall structure. Septa straight, generally not fusing.

*Distribution.*—Cretaceous to Recent; Caribbean, eastern and western Atlantic, Mediterranean, Red Sea, Indian Ocean (Wells 1956, Chevalier 1961, Veron 1993). One specimen is reported in the Pacific from the Philippine Islands (Veron 1993). The new occurrence in the present report adds the eastern Pacific to the known distribution of the genus.

*Siderastrea glynni,* new species
Figs. 2, 3, 5, 6

*Etymology.*—Named after Peter W. Glynn for his pioneering work on eastern Pacific coral reefs.

*Diagnosis.*—Small corallites. Well-developed outer synapticular rings forming a distinctive regular meshwork. Low. straight, moderately thick corallite wall. Numerous equally thin, dentate septa in four cycles, the last sometimes incomplete. Columella porous with a shallow fossa.

*Description.*—Colonies massive, unattached, spheroidal; 7–10 cm in diameter; with a well-rounded, smooth outer surface. Calices hexagonal or pentagonal; relatively small in diameter (2.5–3.5 mm). Outermost synapticular rings regular and well-developed, forming a distinctive meshwork on the upper calical surface. Corallite wall low, solid, straight, continuous, intermediate in thickness (~0.15 mm). Synapticulae arranged in 3 or 4 rings, intermediate in thickness (~0.15 mm). Septa relatively thin, equal in thickness, usually continuous between adjacent corallites. Septal margins strongly dentate, with 8–10 dentations per primary septum. Septal surfaces weakly ornamented. Four septal cycles, with the fourth cycle sometimes incomplete; 40–48 septa per corallite. First and second cycles free; third cycle fuses with second near columella. Fourth cycle free, intermediate in length (~0.5 mm). Columella porous, papillose, intermediate in thickness (~0.4 mm). Calicular fossa shallow. Endothecal dissepiments thin, at 0.3–0.5 mm intervals.

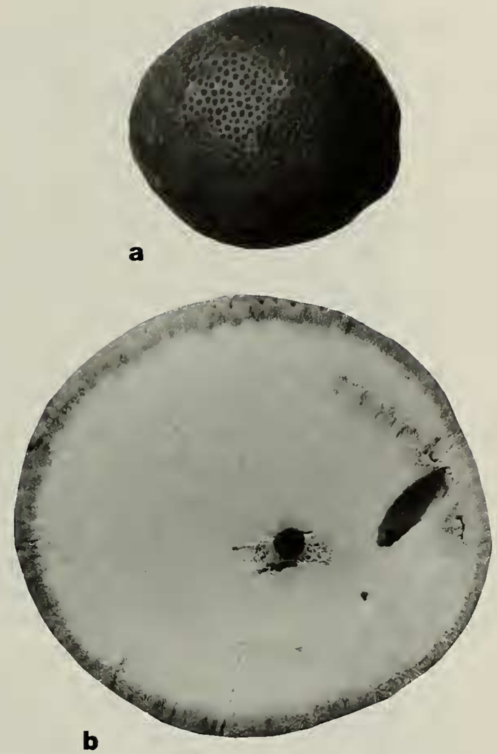


Fig. 2. *Siderastrea glynni.* Holotype, USNM 93956. Recent, 7–8.5 m depth, Isla Uraba, Bay of Panama. (a) Whole colony with soft tissue soon after collection, ×½. (b) A 5 mm thick slab cut through the growth axis of the colony, × 1.

*Holotype.*—USNM 93956 (Figs. 2, 3b, 5, 6); collected 3 Sep 1992, by H. M. Guzman, at 7-8.5 m depth on the upper reef slope along the northern tip of Isla Uraba, Bay of Panama (Fig. 1).

*Material.*—One colony: USNM 93956.

*Comparison.*—*Siderastrea glynni* is morphologically most similar to *S. radians* which also forms spheroidal, unattached colonies with small corallites. However, it differs from *S. radians* by having more numerous, thin septa that are equal in thickness. The

Table 1.—Morphologic characters distinguishing eight species of *Siderastrea*. References: 1 = Budd 1989; 2 = Budd et al. 1994; 3 = Foster 1980a; 4 = Foster 1980b; 5 = Laborel 1969; 6 = Laborel 1974; 7 = Scheer & Pillai 1983; 8 = Veron 1993; 9 = Yonge 1935.

| Species | Distribution | Number of septa per corallite | Corallite diameter (mm) | Columella | Corallite wall | Additional references |
|---|---|---|---|---|---|---|
| *S. glynni,* new species | Recent; eastern Pacific | 40–48 | 2.5–3.5 | intermediate thickness, papillose; shallow fossa | intermediate thickness, 3–4 synap. rings; septa usually continuous between calices | — |
| *S. radians* (Pallas, 1766) | middle Pliocene to Recent; Caribbean, Bermuda, Brazil, w. Africa | 30–40 | 2.5–3.5 | thick, solid; intermediate fossa depth | thick, 2–3 synap. rings; septa usually continuous between calices | 2, 4, 6, 9 |
| *S. siderea* (Ellis & Solander, 1786) | early Miocene to Recent; Caribbean, ?w. Africa | 44–50 | 3–5 | thin, papillose; deep fossa | thin, 3–5 synap. rings; septa alternate between calices | 2, 4, 6, 9 |
| *S. stellata* Verrill, 1868 | Recent; Brazil | ~48 | ~3 (in series) | thin, papillose; very deep fossa | thin, 3–4 synap. rings; septa usually continuous between calices | 5, 6 |
| *S. savignyana* Milne Edwards & Haime, 1850 | Recent; Red Sea, Indian Ocean | 28–35 | 2.5–4 | thick, solid; intermediate fossa depth | very thick, 2–3 synap. rings; septa continuous between calices | 7, 8 |
| *S. mendenhalli* Vaughan, 1917 | early Miocene to early Pliocene; Dominican Republic, California | 48–54 | 3–5 | thick; shallow fossa | thick, 3–4 synap. rings; septa continuous between calices | 1, 2, 3 |
| *S. silecensis* Vaughan, 1919 | early Miocene to early Pleistocene; Florida, Dominican Republic | 48–>60 | ≫4.5 | intermediate thickness; deep fossa | thin, 3–5 synap. rings; septa continuous between calices | 1, 2 |
| *S. pliocenica* Vaughan, 1919 | middle Pliocene to early Pleistocene; Florida | 40–48 | 4.5–5 | thick, solid; shallow fossa | thick, 4–5 synap. rings; septa usually continuous between calices | 2, 3 |

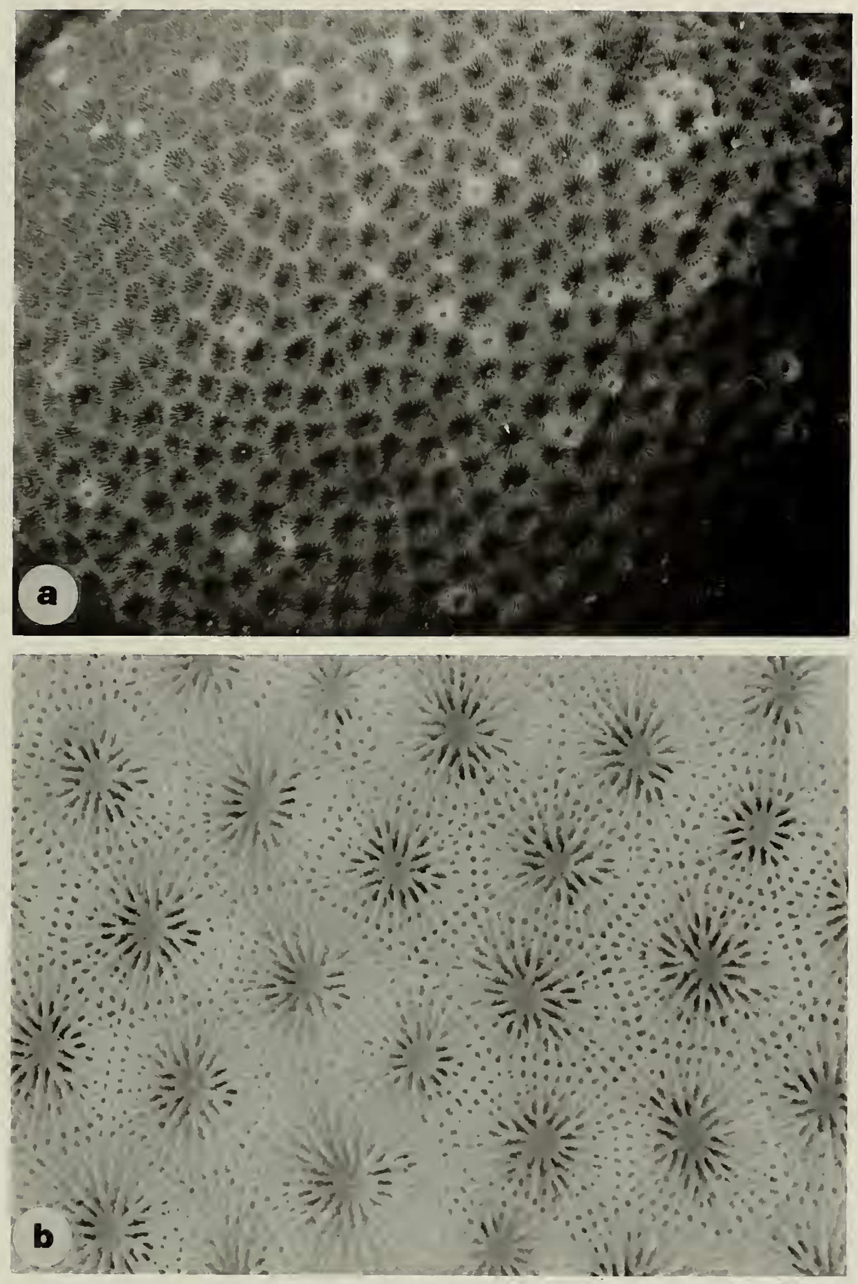

Fig. 3. *Siderastrea glynni.* (a) A closeup of a healthy colony in the field. (b) Holotype, USNM 93956. Calicular surface, ×8.

synapticulae of *S. glynni* are more numerous and regular, forming a diagnostic meshwork on the upper calical surface. Unlike most *S. radians,* calices are typically shallow, and columellae are not solid and prominent.

*Distribution and ecology.*—*Siderastrea glynni* is known only from Isla Uraba in the eastern Pacific, and it is extremely rare and possibly endangered. Colonies occurred clumped in a single patch in shallow reef rubble.

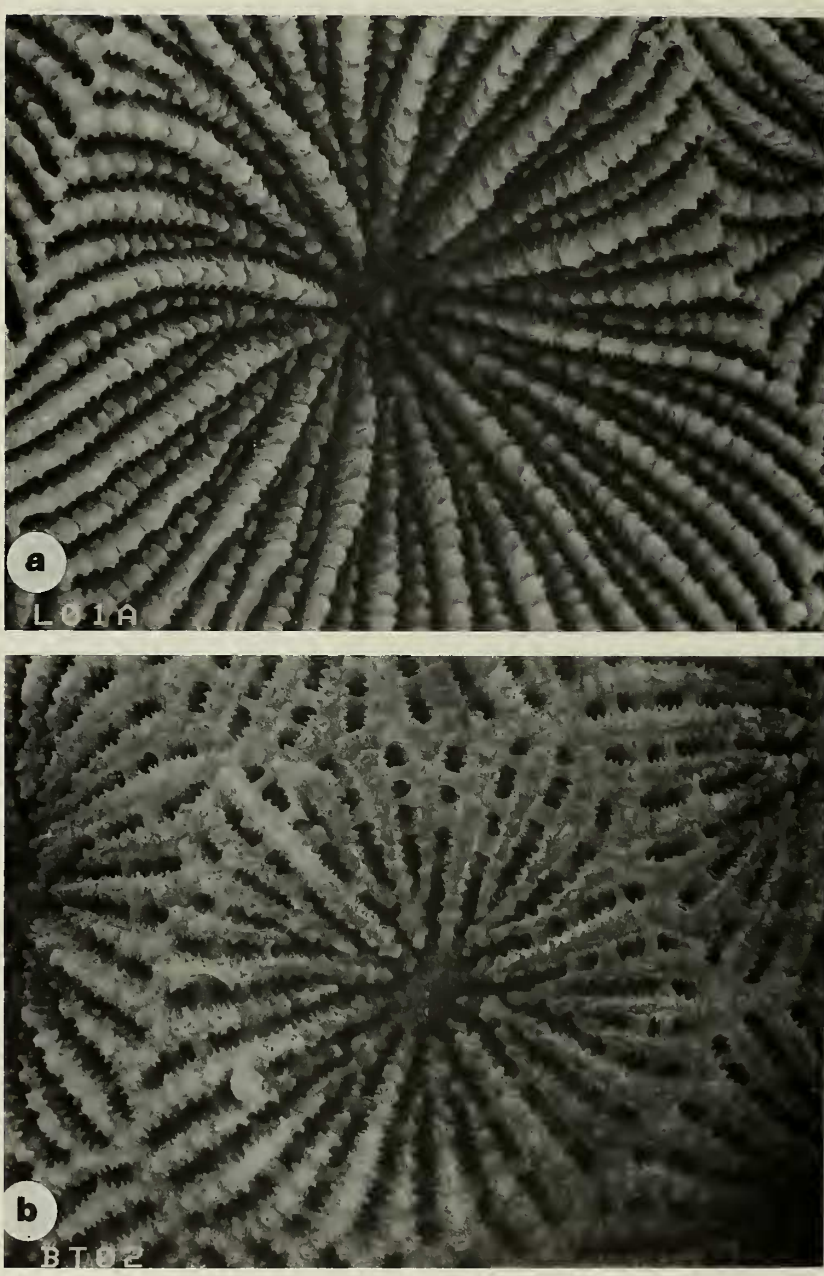


Fig. 4. SEM photos of calices of two common Caribbean species of *Siderastrea*. (a) *S. siderea*. USNM 93957. Recent, 20–25 m depth, Limones, San Blas Archipelago, Panama. ×20. (b) *S. radians*. SUI 84539. Recent, <1 m depth, southeast Cayos Zapatilla, Bocas del Toro, Panama. ×20.

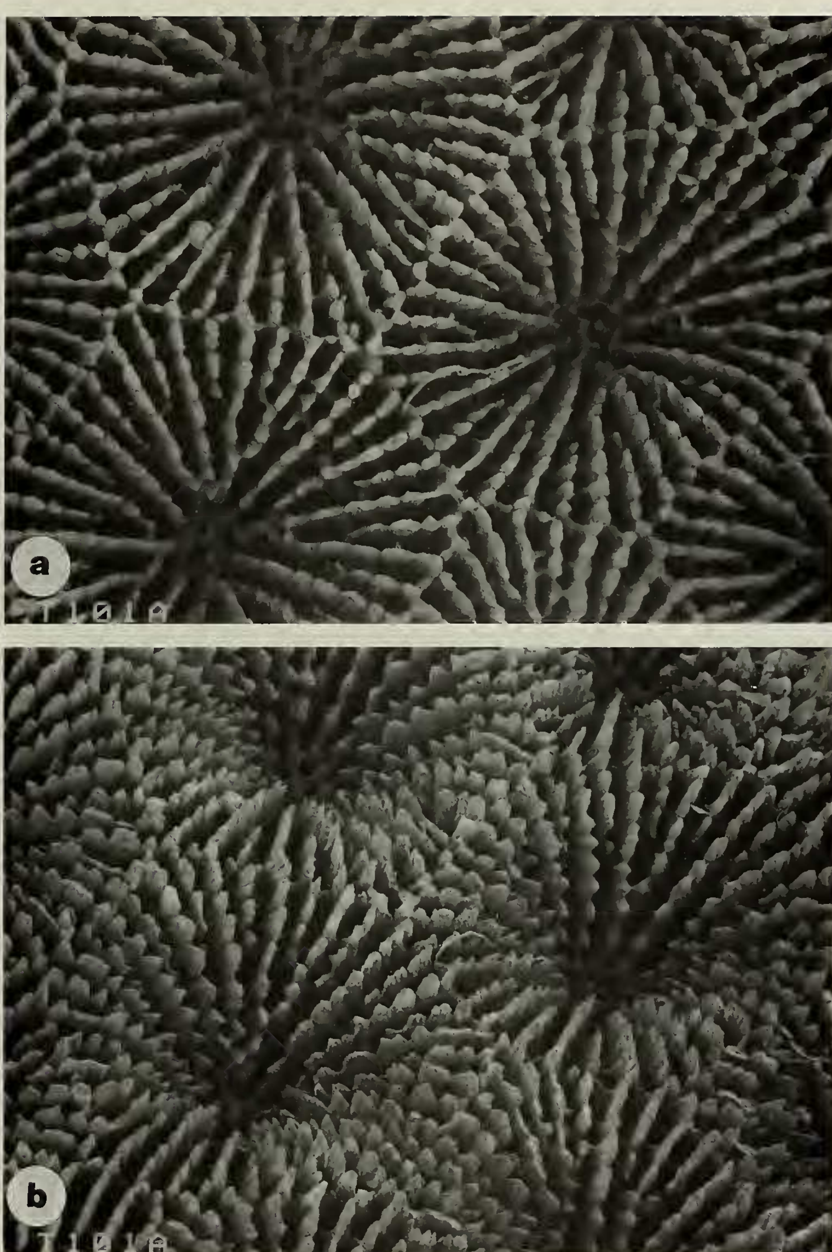


Fig. 5. (a, b). SEM photos of calices of the holotype of *Siderastrea glynni,* USNM 93956. ×20.

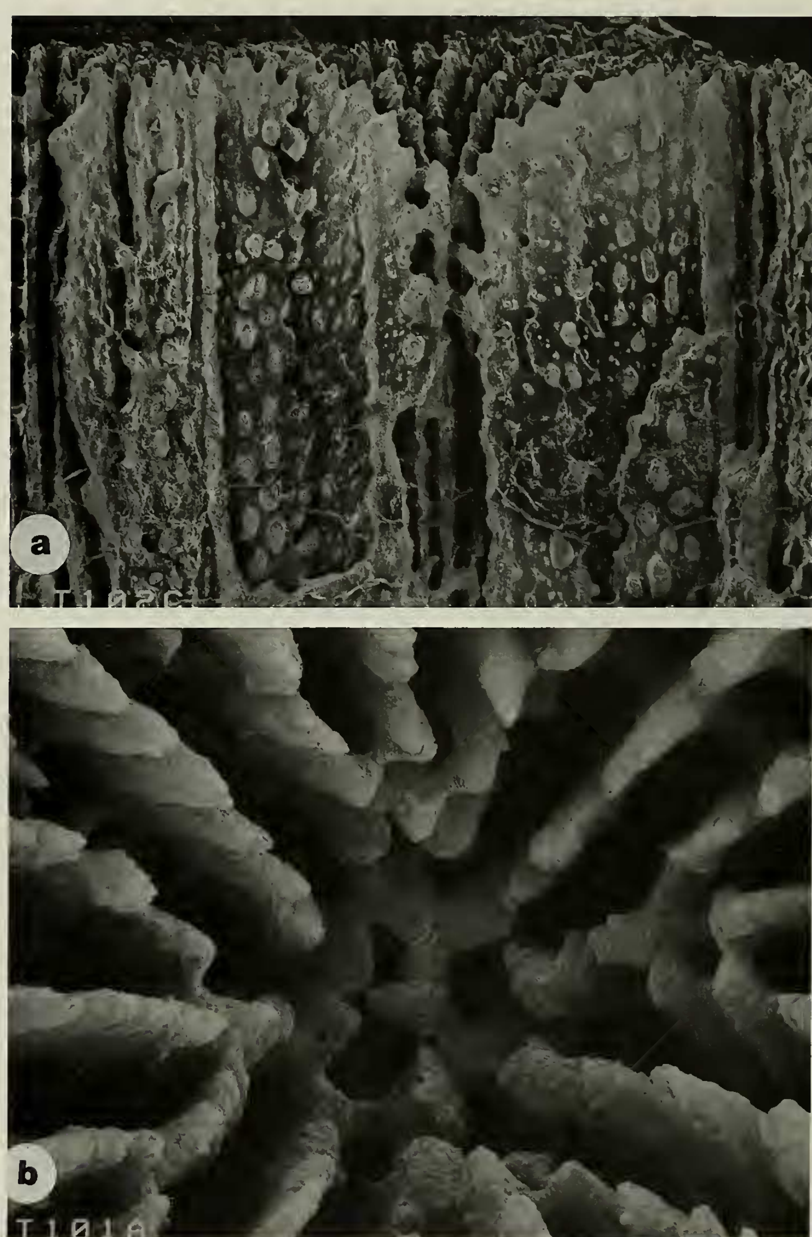


Fig. 6. SEM photos of the (a) wall (×20) and (b) columella (×80) on the holotype of *Siderastrea glynni*, USNM 93956.

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